SB
205
A4
F66
19113

ALBERT R. MANN
LIBRARY
AT
CORNELL UNIVERSITY

CORNELL UNIVERSITY LIBRARY
3 1924 073 871 695

Cornell University Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

http://www.archive.org/details/cu31924073871695

Production Note

Cornell University Library produced this volume to replace the irreparably deteriorated original. It was scanned using Xerox software and equipment at 600 dots per inch resolution and compressed prior to storage using CCITT Group 4 compression. The digital data were used to create Cornell's replacement volume on paper that meets the ANSI Standard Z39.48-1992. The production of this volume was supported in part by the National Endowment for the Humanities. Digital file copyright by Cornell University Library 1994.

Scanned as part of the A.R. Mann Library project to preserve and enhance access to the Core Historical Literature of the Agricultural Sciences. Titles included in this collection are listed in the volumes published by the Cornell University Press in the series THE LITERATURE OF THE AGRICULTURAL SCIENCES, 1991-1995, Wallace C. Olsen, series editor.

ALBERT R. MANN
LIBRARY

NEW YORK STATE COLLEGES
OF
AGRICULTURE AND HOME ECONOMICS

AT

CORNELL UNIVERSITY

*Yours truly,*

*The Author.*

# ALFALFA
# ON WILDWOOD FARM AND HOW TO SUCCEED WITH IT

BY

## H. D. FOLMER

PUBLISHER AND PROPRIETOR

PRICE ONE DOLLAR

Address all Orders to
H. D. FOLMER
WILDWOOD FARM, WEST JEFFERSON, OHIO

COLUMBUS, OHIO
NITSCHKE BROTHERS, PRINTERS
1911

SB
205
A4
F66
1911a

351744

COPYRIGHT 1911
BY H. D. FOLMER
PUBLISHED
SEPTEMBER, 1911

# TABLE OF CONTENTS

| CHAPTER | TITLE | PAGE |
|---|---|---|
| I. | Introduction | 11 |
| II. | Our First Experience | 15 |
| III. | Other Experience | 19 |
| IV. | The Best Way of Raising It | 27 |
| V. | How to Make the Hay | 41 |
| VI. | How to Feed It | 53 |
| VII. | Alfalfa for Pasture | 59 |
| VIII. | Plowing the Sod | 65 |
| IX. | Alfalfa Sod for Corn | 71 |
| X. | Why Some Do Not Succeed with Alfalfa | 77 |
| XI. | Possibilities of Alfalfa | 87 |
| XII. | Conclusion | 99 |

# PREFACE.

## WHICH YOU MAY READ FIRST.

The country is full of books, and the question might arise, why should an obscure farmer of Central Ohio add another to the pile? Though the number is legion and there is seemingly no end to the papers and magazines which added to the book pile make it amply sufficient in quantity, when we select from this pile only what tell the truth, the truth that makes us free, the truth that advances the world in righteousness and happiness, the books and papers that do not also contain much error, what have we: much less than one per cent. Take one of our daily papers for instance, note the part taken up in telling the crimes and casualties, of what real good is this? It but corrupts more and more the people. Another section is devoted to dishing out political slop to the voter, and is paid for by men who are morally unfit to hold a single office of trust or profit. It is true the paper is quite cheap, probably sells for one cent; but the quality, is cheaper.

But what of the literature on alfalfa? The farmers of Ohio have only heard of it a few years ago, yet it is as old as any grass we know today. It has been raised in sections of the United States one hundred years or more. Until lately, our government, which was to be for the people and should have given free and exact information on this plant to the farmers long ago, has been too busy fattening millionaires and fostering corruption in our body politic to find much time to help those who raise the bread upon which all are fed.

When the reader learns that a full and accurate knowledge of the plant alfalfa applied by the farmers of this country can more than double the wealth of this fair land within ten years, he will readily see that books on this subject are needed at once. The writer has had fifteen years of exerience with alfalfa; and, had he known fifteen years ago what he knows now, now could have been worth over one hundred thousand dollars. However, he has been successful, and will give to the reader the information that will enable him to raise profitable crops on his farm. Some of the poorest land in this state will grow the best alfalfa. The hilly land will become worth ten times as much as now when established in this crop.

The writer will also try to show why some fail and how they might have succeeded. This book will give, in plain language from a farmer's standpoint and to farmers, the failures and successes side by side, and the reasons for each; and will try to give the reader such a knowledge of the subject that he can go ahead and succeed.

# Introduction

# CHAPTER I.

## INTRODUCTION.

Farmers of Ohio are hearing much of alfalfa through their agricultural papers at the present time; but few of them have heard of it until within the last twenty years, the old files of the papers being silent. We thought it was something new to the world, and are surprised to learn that it is at least as old as history and that it was grown in Central America and Mexico one hundred years ago. There are alfalfa fields in Texas, New Mexico, and California, some of them one hundred years old. We have not known, but it is a fact, that alfalfa under the name of Lucerne was grown in parts of New York and New England a century ago.

Government officials, travelers, millionaires, and all others beside the farmer, who have heard of the success of alfalfa, seem to have remained silent or opposed its introduction into Ohio; although these same ones have been fed by the farmer; and it was reserved for Joseph Wing and some other leading farmers to proclaim the fact that alfalfa can be grown all over Ohio when the soil is put into the right shape, and that it is the most profitable crop we can raise.

In the course of the year, as a forage crop, it yields more tons to the acre and the quality is higher than any other crop. As a soil builder it is as much in advance of clover as clover is in advance of timothy. And when it comes to the question of crop failure, the grower who understands the laws of its growth is not as likely to fail with alfalfa as with other farm crops. And after he gets well started, will begin to see the other crops failing less and less where alfalfa has been grown. A few who have grown it have sung its praises, and the doubting farmers have probably said to themselves, "Fool, crank;" but these doubters will one day wake up and realize that only one-half of the praise and truth has been given. We venture to prophesy that before twenty-five years roll around the United States will be growing ten times as much alfalfa as red clover; and some of the growers will become millionaires.

# Our First Experience

# CHAPTER II.

## OUR FIRST EXPERIENCE.

During the summer of the year 1896, we sowed a mixture of clovers in the growing corn at the last cultivation. This mixture consisted of Red Clover, Mammoth Red Clover, Alsike Clover, Crimson Clover, and Alfalfa—one peck each. This was sown just ahead of the cultivator as the corn was being "laid by." Ample rain to sprout the seed quickly followed, and the new plants were soon up and grew luxuriantly. During the autumn, the ground was entirely covered with a thick carpet of green. The following winter was favorable, and the new seeding made a complete set of grass all over the ground. The first to blossom in the spring was the crimson clover; and it appeared at some distance as a beautiful, immense flower bed. In a few days this changed color as the other clovers blossomed. When the alfalfa blossomed it did not then reveal the part it was to play in the struggle of "the survival of the fittest." The following year witnessed the passing away of the crimson clover, and the next summer the alfalfa was about all that was left. The wonder of it was, there was enough of this to pay to leave it in meadow for several years, and only from six pounds of seed to the acre; for the mixture was sown at the rate of one-half bushel to the acre. Had we after this used six instead of fifteen pounds of seed to the acre, we would have been ahead. We are reminded of a saying of one of our hired men: *"They say the way to tell whether it is a mushroom or a toadstool is to eat it, and if it doesn't kill you it's a mushroom."* The above method is the way we got our alfalfa experience and the reader may profit by it if he desires to do so.

The alfalfa plant then seemed to us as a star of hope shining upon a darkened sky, and foretold the dawn of prosperity.

Black Locust Forest on Wildwood Farm, viewed from the Stephen Smith farm.

# Other Experience

# CHAPTER III.

## OTHER EXPERIENCE.

The year following the first seeding, we tried again; this time with red clover and alfalfa, sown on wheat in February when the ground was bare and frozen. The mixture consisted of one-half peck of each to the acre. This came up and seemed to grow well together in the wheat. In September, after wheat harvest, the stubbles were clipped with mower and clippings left on the ground. The year following three crops of hay were taken from this piece—two of clover and alfalfa and the third mostly alfalfa. This piece was mown for several years longer until the farm had forty acres of alfalfa. But it was found to be a little patchy where the red clover would fail; for it would appear to fail at times and then it would grow in again, probably because the ground was full of the seed. This land had been run for nine years in the three-year rotation—corn, wheat and clover—and sometimes the second crop of clover went to seed and was not harvested.

The plan of sowing red clover with alfalfa has one thing to recommend it; it is a thorough way to inoculate the soil with the proper bacteria. This proved so, in this instance, for the second time this was seeded, which was with alfalfa alone, a complete set was the result, all over the field, and the yield was much greater than the first seeding. Every year after, a new piece was sown, but during the first years with red clover. Sometimes half the seed was sown in February on a frozen, honey-combed surface, and the other half in the dry time in April when the ground was full of cracks. The early seeding did best on the red and white clay spots, and the April seeding best on the black ground.

One year we sowed alfalfa along with spring barley, one-half bushel of barley and one peck alfalfa per acre. The barley was a failure in making a crop of itself, for it stood quite thin on the ground and developed smutty heads, but the alfalfa was a good set and made a profitable meadow. The evidence was strong that alfalfa should be sown alone, and from that date we generally sowed it alone. But a new experience was to be had: when sown alone, weeds sprang up and threatened to choke it, especially where manure had been applied. The mower was used in such cases and the clippings left on the ground, except when too thick, then they were raked up and hauled and spread over the pasture field for the cattle to pick over.

One time the new-seeded field was not clipped in time, for it was a rainy time and the mower wheels would have dug deep ruts in their course. The result was a patchy meadow, for in the weediest places the alfalfa was smothered out. The next time such a circumstance headed for us, we won the battle with the weeds. Although it was too muddy for a mower to be used, we went at it with scythes, and clipped off the weediest spots, thus saving the crop.

One year we sowed oats in the spring with the alfalfa—one-half bushel oats and one peck alfalfa per acre. The oats were mown for hay as soon as headed out, and a second crop—mostly alfalfa—was cut later. But it took a year—as usual—to clean out the weeds.

One spring, where sown on wheat, the alfalfa was a failure, for the wheat, being heavy, smothered it out in spots. As soon as the wheat was removed from the field, the ground was disked and alfalfa and timothy sown and dragged in with smoothing harrow. A good rain followed, and the seed came well; but the wheat scattered over the ground grew also and so thick that it threatened to smother the grass. But just then something happened to the wheat—whether fly, chintz bug, or what, we could not say—it died and the alfalfa was a good set just as winter came on. In the spring the set was patchy; but, as there was timothy in the spots where the alfalfa was killed out, we left the piece in meadow.

As time went on and the acres of meadow grew comparatively numerous, we turned our attention to certain spots where the plant had not done well. These were plowed, harrowed thoroughly, and seeded again. This was a successful move, for the new seeding was about twice as good as the old. This seemed to prove that alfalfa should be sown alone, and also that the soil had now become inoculated. But the first year we always had some weeds in the hay. Yet alfalfa had a way of triumphing over the weeds. The mower helped in this. Some weeds gave more than one battle before they were conquered. You see the alfalfa grew so fast that it was ready for the mower before the weed had ripened seed. If it tried again to grow, the mower got it again. One season seemed to clean the field of weeds. We had some neighbors next to us, who left thistles to go to seed, and the seeds would start in our new meadow; but how slender the plants grew, and the mower always got them in time. Being cured with the hay, the stock would eat them; for perhaps they were flavored by the green grass in the heating process in the mow. Plantain would struggle on, but so shaded as to do but little harm, while the docks were harder to kill.

But lest the reader think we had no complete failures, we would mention these also, that he may not make the same mistakes we did. One year a truck patch—as rich as a garden—was planted to early potatoes. As soon as the cultivation of these was finished, sweet corn was planted between the rows. After digging the potatoes, the corn was cultivated until a little over a foot in height, and alfalfa was sown among the corn at the last cultivation. This was a failure; for, although the grass looked pretty well in autumn, it was about all killed out the next spring.

Another time we plowed a piece in summer, harrowed it, and seeded on the last day of August; but the weather was too dry, and the piece had not been plowed early enough nor harrowed enough. The result was an uneven set, and the winter was too much for it; so it was plowed up and sown to oats and alfalfa the next spring, and became a good meadow. This proved the value of the advice, "If at first you don't succeed, try again."

We sowed once in June, but did not have time enough to get the piece in good condition, and dry weather killed it, for but little of it grew.

On this farm, it has been tried several times in the corn; but with varying success. Generally the set was uneven and the corn shaded it too much; and, another objection, the ground is left too rough for meadow. And now the reader is probably ready for the next chapter; for the failures and successes given side by side in this chapter show clearly the right way to success.

# The Best Way of Raising It

# CHAPTER IV.

## THE BEST WAY OF RAISING IT.

Before entering far on this subject we wish to outline clearly some mistakes to be avoided. Some farmers believe in early seeding, as the seed is almost sure to grow. But, in our experience, when sown on wheat in early spring, the set often proved poor if the wheat was thick and weedy when the wheat was thin. In either case the weeds were very much in evidence the first year, and the hay weedy and the meadow patchy. When sown with oats early, often the oats proved a little too much or else the weeds came in. The weeds did not seem to need the sunlight as much as our favorite plant. So it should be sown when the sun has considerable power to help it.

Again, we may sow too late. After July is a very uncertain time, as the weather generally proves dry at times and the young plants do not become well enough rooted to go safely through the winter.

While the plant loves a deep, rich and well-drained soil, at the same time a sufficient amount of moisture near the surface is needed to start it. It ought to be sown when we are pretty sure of rain every week or two. This time here is in June or the first half of July. But even when sown then, we must figure how to kill off the weeds. This is to be done by frequent and thorough cultivation. The land should be broken up and stirred deeply, so that it may become a receptacle for sufficient moisture to tide over a dry spell. The surface ought to be stirred after rains—when dry enough—to keep the moisture from leaving the ground.

Therefore, plow the field intended for seeding the fall before or early in the spring as soon as the ground is dry enough. Whenever it is dry enough, it ought to be stirred about once a week to kill weeds as they sprout. Different tools are better to use. First the disk harrow, then the plank or scantling drag, and last the smoothing harrow; each at intervals of about one week, and when rain falls as soon after rain as dry enough. When the ground is loose the drag and harrow may be used alternately a few times. After using the drag and harrow until the ground becomes too firm, dig it up again with the disk or cut-away harrow, and this time crosswise. This frequent cultivation tempts weeds to sprout and then kills them. It conserves moisture in the soil until the time comes when the plant will need it. It lets some air into the soil, which helps to develop plant food against the time when it will be needed to make the plant vigorous to go safely through the winter.

If this work has been thoroughly done by the middle of June it is time to seed. But if the weeds are not well killed and not enough moisture in the ground and the seed bed not sufficiently fine, it is best to delay seeding and do more work. But, when you do sow, see that the ground is dry enough and yet have enough moisture to sprout the seed. Sow about one-half peck of clean plump seed to the acre, and cover very shallow. If it seems to be turning too dry before the seed sprouts use the roller; but, if rain is near, omit the rolling, as the ground might become crusted and the young shoots have difficulty in getting through. At seeding time, were we very sure that rain would come in a day or two, we would not cover the seed at all, as the set would be more uniform and complete and the plants would come on very much faster than if they had to force their way through say one inch of soil before reaching the air and light.

We have said, sow one-half peck of seed to the acre. This needs some explanation; and, as the quantity is very important to know, we will post the novice so he will be master of the situation. We sowed for several years one peck of seed to the acre, and it seemed to give good results. This was about the right quantity when sown with wheat or where weeds would be likely to come thickly. It happened one year that we seeded a piece with oats in the spring, sowed with a grain drill. The drill was set to sow one bushel of oats and one peck of alfalfa per acre; but it actually sowed three pecks of oats and about twelve pounds of alfalfa per acre. We got a good set of alfalfa. Of course, the oats were mown for hay as soon as they were fairly headed out; and a second crop was cut from the piece, this time mostly alfalfa. The more we investigated the seed question, the more we were convinced that ten or twelve pounds of seed was an abundance; and, when the weed seed was killed, it was too much for best results. So our later experience convinces us that, when the ground has been cultivated for several weeks, the weed seed being nearly all killed and the seed sown without a nurse crop, that one-half peck per acre is sufficient. The plant grows more hardy, stools out more, sends its roots deeper into the subsoil, and lasts longer than when the plants are so thick as to crowd one another. Furthermore, the one who expects to grow seed should not sow over one-half peck to the acre, and some less would be better where seed is the main object of the crop. We have never threshed any seed, but are convinced that it can be raised in Ohio as well as the seed of red clover, and some of these days may prove it, as seed of the right kind is hard to get. The Turkestan variety is no good here in Ohio. It is a dwarf kind and not near as good as our Western seed. If any seedsman sells you this for alfalfa, don't buy another thing of him hereafter. Some unscrupulous seedsmen are buying cheap foreign seeds and palming them off on the farmers as good seed, and the farmer's best remedy is to expose them in the grange and elsewhere and not purchase another thing of them in the future. Let us do our part in teaching them that, "Honesty is the best policy," and that the farmers are not to be fooled twice by the same man.

But to resume where we left off—we have finished seeding. At this point some would top-dress the piece with manure as a mulch and a fertilizer for the new crop. But we would not do so; because the manure often contains weed seeds, and weeds coming at this stage would prove great injury to the coming crop. A better plan is to put the manure on pasture or other ground that is to be broken up for some hoed crop the coming year, and the cultivation afterward will kill the weed seed, and the remnant of the manure will become a humus and modify drought when the field becomes an alfalfa meadow. Manure is a very great help to alfalfa, but it may also help the weeds. So the wise plan is to get it to help the alfalfa and not the weeds. We have tried both ways, and are very sure in regard to this advice.

Now in spite of all this work we have done there will be some weeds in the young alfalfa. When the young plants have got several inches high—say six or eight inches—run the mower over the field, and leave the clippings on the

Young Catalpa Forest on the old Clark Hill, on Wildwood Farm.

ground for a mulch. Most of the farmers set the knife up several inches higher than for hay-cutting. We used to do this, but of late years we use it the same as mowing for hay. This low clipping gives the weeds a far greater setback than it does the alfalfa. The alfalfa soon recovers, but the weeds fall behind and are the sooner smothered out. Yet, if we were bothered with grasshoppers from an adjoining field, we would clip high or perhaps a little later, for this pest would work on the new growth and injure it greatly. We are not much bothered with the grasshoppers, since we do not let our fields stand many years in grass, and thus they are rotated out. We may clip once or twice according to the weather and growth of the new crop, but never later than the first of October, as the new growth should be six or eight inches high as winter comes on to hold the snow and protect the roots from freezing.

Sometimes the ground will be too soft to go onto the field with the team and mower when the clipping should be done. In this case do not let the weeds get the mastery, but go on with scythes and clip by hand, wherever necessary, and leave the cuttings spread evenly. Be careful to look to this matter, or else the field may be spotted with bare or weedy places the following year.

It might possibly happen that the clipping has been delayed or the growth has been so rapid that there is danger of these clippings smothering the new growth. Should this be the case, the farmer might rake them up and haul them away to the pasture field or cure them for hay. We have done so more than once, and with profit.

If the farmer thinks lime is needed, he should apply same while preparing the ground. But if the field will grow red clover well, it does not need lime.

And now in regard to inoculation. Some take soil from an old alfalfa field and spread same with spreader or grain drill over the ground to be seeded. There is another way and perhaps the best. Sow red clover and alfalfa—half and half. Let them stand until the red clover fails, then break up and reseed the alfalfa. This time we think the alfalfa will do well.

The land must be thoroughly drained, either naturally or artificially.

We think if the above directions have been carried out, there is hardly a question but what the farmer will succeed. But suppose the seed fails to sprout sufficiently, then it will have to be dug up with the disk harrow and made fine and level and reseeded. This can be done if not later than July. If the farmer has tested his seed beforehand and knows it to be all right, and yet it fails the second time—of which we can hardly conceive—why he ought not let a little thing like this knock him out of the race, but go in to win. He will have to give this piece of ground heroic treatment. Haul a large quantity of manure—say sixteen spreader loads to the acre—during the fall. The following year plant to a hoed crop, and give quite clean cultivation. The farmer may think this a lot of trouble, but all the past cultivation and the manure will show in the new crop. Probably it may be the biggest crop he ever saw. The following spring after this crop is removed, we would try the alfalfa again, as before; and there can be no doubt of success if properly put in, as alfalfa always responds to manure.

One thing the farmer ought to realize from the first; and this is, take enough time and thoroughly do the work at the right time. There is no use for him to give up and say he cannot raise it, for he can do so. Alfalfa has been successfully grown in every county of Ohio, and on every variety of soil. It all depends on whether the farmer will push it to success or give up. He ought to decide how many acres he can find time to grow successfully. Better try only one or two acres at first, until he has had some experience. Then feed the first alfalfa hay, with other crops to balance the ration; and use the manure for more acres of meadow. This manure will inoculate the soil.

If the farm is poor, do not sell any hay; feed it all with other feeds, and take good care of the manure. This stable and barnyard manure is superior to commercial fertilizers, for it gives humus to the soil, and the other fertilizers leave it compact. We have tried the fertilizers on Wildwood Farm, and they fail to increase the crop. But on some farms they seem to give good results. We did not wish to be behind those who made a success with the commercial fertilizers. So if we had one hundred dollars to spare for fertilizers, we spent it for corn, fodder, clover hay, oil meal, or some other feed and fed it; and when the stock were sold, took part of the money and bought more feed and so increased the fertility and helped the land through the humus content.

The farmer will readily see that this course pursued will soon make any farm rich enough to grow alfalfa; and, no matter how small the beginning, the results will multiply very fast and success will come if the farmer will persevere long enough.

# How to Make the Hay

# CHAPTER V.

## HOW TO MAKE THE HAY.

The farmer would not go far wrong who would cut and make alfalfa hay just as he would good clover hay. But there are some differences, and these ought to be known at the start, and yet the farmer will learn them better after he has had experience. The English farmer cuts alfalfa before it blossoms; but the American probably can never do this, at least not for some years to come. The English farmer has been buying our corn and oil cake and other concentrated feeds, and fed them on his farm. This and other methods of good farming have made his acres very much richer than ours, and so his alfalfa grows faster and it is taller when it blossoms than ours. Probably when the first blossoms appear, especially if the plants are more than two feet tall, is usually time to cut. But there is another way of telling the time, and much surer, as alfalfa may bloom at one, two, three, or four feet in height, according to soil and other conditions. When the second growth has plainly started at the root is the proper time for us to cut. There is an exception to this rule and we will give our experience: Once, when we had too much work to do, we decided to let a part of the alfalfa meadow go without cutting, and leave it for corn the following year. But it transpired that we got time later, and decided to mow it and let the cut grass rot on the ground and the new growth come up through it. This piece had grown and fallen down until it was four and five feet long and had smothered out the second growth. There was some seed on it also. We were then afraid to leave it on the ground lest the next growth would not start, and the quantity of hay it would make was a temptation for stacking it. We can assure the reader that it was a grand sight when it was in shocks. For one could sit down in the center of the field and, in any direction he might look, could see nothing but hay shocks, they covering all the outside view. We got a good second crop of hay from this piece, but the next year the field grew mostly white top weeds. Possibly we might have been ahead, had we left the field uncut and planted corn the next year. This taught us to cut at the right time, for when alfalfa goes to seed it may die out partly the following year;

and also, when it falls down, the new growth dies and the first continues to grow. We have found alfalfa loaded with such surprises.

So we begin when the new growth is well started, or, if it is rank and falls down, cut at once. This in this vicinity usually is during the first half of June, depending somewhat on the season.

After cutting, it should not be left too long to become sunburnt, but raked up and put into small tall shocks to cure out. If the shocks are small at the base and tall, we can cure the hay greener. Over one-half the value of the hay is in the tops and leaves; and, if it gets too dry, these fall off in the field and are lost. So we will have to do most of the curing in the shock. It may stand in shock two or three drying days. Before hauling in it is well to turn over the shocks and let them sun an hour or two and the wind blow through them, but don't let them get too dry. We are speaking to farmers who have made hay, and will understand that the time it will take will depend upon the weather and other circumstances, and that no fixed rule can be given. It is better to put it up too green than too dry. We have fed hay that looked rotten and moldy, and yet the stock preferred this to late-cut hay and did well on it. It was not rain water that caused the mold, but the juice of the hay combined with other conditions, such as cloudy weather. We have to do as we can, you know, when the weather is uncertain and rainy, and hay may have to be made too green rather than be spoiled by leaving it out in the rain.

In regard to using the tedder, it should be used soon after the cutting. When it is a little too dry, the leaves may be broken off and the stems cracked and, if rain falls on it, the hay will spoil more than if it had not been touched at all.

We make it a rule to shock up all we rake before rain; not rake much ahead unless we are sure it will cure some in the windrow and at the same time be put into shock before rain.

Possibly some good hay might be made in a very drying time, without shocking, but the most of the good hay will have to be made by curing in the shock, as the sun injures hay if left in the swath until dried through enough for mow or stack. A windrow loader could be used in a drying time, if the farmer cares to take the chances of rain coming before the windrow hay is cured.

Alfalfa hay does not occupy as much mow room as other hay, say one-third that of clover and perhaps one-half that of timothy per ton. But the grower of alfalfa will need as much mow room as before, for soon he will be making enough more tons to fill all the mow room he has. It has taken us a long time to realize this; for we have been deceived many times in the quantity of hay, it lasting so much longer than we expected.

When the hay is put up a little green, which we sometimes have to do, it is a good plan to make the shocks very small and comparatively tall. Then after it cures some and while the sun is hot, remake them into larger ones to complete the curing. But move them only when the sun shines, leaving the small shocks in forkfuls for a time to cure some before putting into larger shocks. All this is considerable trouble, but the feed is superior, and it will repay the labor to have the hay that will grow and fatten animals.

In stacking the hay, be sure to keep it well tramped down, all except the outside foot of the stack. Top out as well as you can, as alfalfa settles more than other hay. Timothy is best for the top, but if it cannot be had, use alfalfa; and at the time of the next cutting when the stack is settled, top-over-and-around the first top with hay that is pretty green. It will cure enough; if it spoils some, remember the top spoils some anyhow. The gain of the heavy top is, the wind will not be as likely to blow it off.

Our alfalfa has sometimes been attacked by a sort of red rust, a fungus growth. This usually appeared between the first and second cuttings. The plant would cease to grow; and, if left to stand, the leaves would fall off. When this occurs we find it best to cut at once, and the plant becomes green and growing again.

As we have started to give enemies of alfalfa, we might now give the rest: A black bug has some years appeared, but we could not notice the damage it did, whether it lived on the alfalfa or on some other plant, we did not determine.

Grasshoppers sometimes injure the crop, if the field has been seeded several years. The remedy is to plow, plant to some hoed crop, and thus rotate them out.

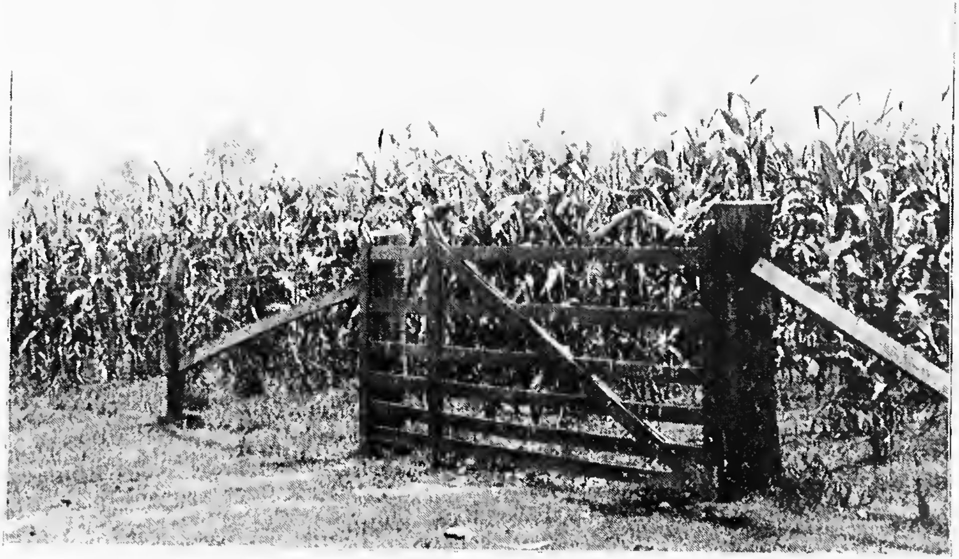
Woodchucks, or groundhogs as some call them, have done us some slight damage. We have caught them in steel traps when they became numerous enough to become noticeable. We would suggest this method where the farmer has a family of boys. Give the boys a premium for each animal caught. The skins may be tanned and used for various purposes, among which they will be a good substitute for chamois skins for cleaning furniture, etc.

Different writers have suggested bisulphide of carbon. Joseph Wing says in his book, Alfalfa Culture in Humid Lands, page 39: "The manner of using is to saturate a rag with a quantity of bisulphide of carbon, using about a tablespoonful for each opening, push the rag as far down the hole as you conveniently can and at once close the hole. It soon forms a gas that is heavier than air and settles to the remotest depths of the den, suffocating the inmates. All openings must be tightly closed and each one should be treated to a dose of the poison. It is not a dangerous substance to work with, only one should bear in mind that the gas is explosive and not have the bottle open near a light or fire. Should the den be dug out again it will probably be from the outside, and the treatment may be given again to care for the new tenants."

Probably the reason we have so few enemies of alfalfa on Wildwood Farm is because we rotate them out. In fact, this is the best way; nature rotates, and we may study nature. After mowing the alfalfa for several years when it runs into blue grass too much for meadow instead of disking to kill the blue grass, we use it as pasture for two or three years. The stock disturb the woodchucks, moles, snakes, gophers, grasshoppers and some other enemies and hold them in check; and when the field is plowed in its turn, this makes a finishing stroke for them.

You see, reader, the enemies of alfalfa are not very formidable when we know how to manage them. In fact, they are not as formidable as are those of some of our other crops, such as fruits, potatoes, wheat, etc., yet we do not refuse to raise these latter because they have enemies who sometimes do great damage.

But there is an enemy that will require the farmer's best skill and brains to manage and this is MAN. He has succeeded in keeping alfalfa



Corn on Alfalfa sod, planted May 24. Alfalfa sown in corn at last cultivation, June 30. Picture taken August 11, 1911. About 2½ in. rainfall here since planting.

from spreading over Ohio during the last century. Some farmers tried it in a half-hearted manner and when it failed condemned it. Some of the seedsmen wanted the acreage sown limited, so that they could furnish about all the seed; for, if the quantity grown was too great, the farmer might raise his own seed and be independent of the seedsman. Hence he advised sowing one-half bushel per acre. A few, who lived by farming the farmer, wanted to see him kept down and helpless that they might the easier grind profits out of him. Had the farmer grown alfalfa successfully and become well-to-do, he would have found time to read and study his interests and not have been the prey he has been of the politician and millionaire. The Grange has been the farmer's friend. It has taught him the value of organization, and has given him considerable recognition in legislative halls. He got but little notice until the Grange came to his rescue, for about all the laws benefiting the farmer came through Grange agitation.

By this time the reader probably desires to know what has been the yield of alfalfa hay on Wildwood farm. We can only give approximate figures, as we have done but little weighing; never having sold over ten tons of this hay, and not until lately have we had large farm scales of our own. But using our best knowledge, we believe that during the first years we raised alfalfa the yield would average about three tons per acre—all three cuttings. In a few years after the yield had advanced to about four tons dried hay. Now for several years we think the average yield of dried hay per year is not less than five tons. And the end is not yet, we trust; for during all this time there have been spots on the farm where the yield has been much greater. From past experience, we are very positive that after draining thoroughly all plow land and getting enough humus into it, this five-ton yield can be much increased.

# How to Feed It

# CHAPTER VI.

## HOW TO FEED IT.

The farmer who feeds alfalfa hay for the first time may meet with little surprises. His horses may at times leave their corn and go to eating the hay when the two are fed together for the first time. His cows, that have been fed on corn fodder, will make surprising gains in milk yield. These things may make him scratch his head and send the blood to his brain in a hurry, yet, if he takes away the corn and fodder entirely and feeds the alfalfa alone, he will be about as bad off as before, as he is again feeding a one-sided ration. All farmers understand the meaning of the balanced ration; that it will not do to feed one kind alone, but several kinds whose elements combined will supply what the animal needs to support life and grow and maintain the body.

Alfalfa is a protein food. The farmer with plenty of alfalfa need not buy wheat bran nor oil-cake meal, for he has just as good and a much cheaper stock food in his alfalfa. We venture to say that when the humus and fertilizing value is considered in connection with its feeding value, his hay is worth ton-for-ton as much as wheat bran, and two tons of his hay is worth as much as one ton of oil-cake meal. The experiment stations estimate the feeding value of alfalfa nearly as high as this, but do not take account of its humus value as a fertilizer.

As the hay cannot all be cut and made in one day, it is evident that some portions will be cut earlier than others. When the farmer can easily do so, it is best to keep the different kinds so separate that he can get at each when he wishes. This can be easily done when the hay is put up in small stacks; and in the hay shed, when put in in sections. When this hay is put in the barn, it is probable that the farmer has two or more mows. If so, fill each mow so that the earliest cut of each crop will be in one mow and the late cut in another.

The earliest cut is good for pigs, chickens, cows giving milk, calves, sheep, lambs, colts, and beef cattle. The latest cut will do for horses, growing stock, and all animals being roughed through. Road horses can be fed the ripest hay.

Beef cattle need with the hay straw to eat and lie upon, corn fodder and corn, both husked and unhusked. We sometimes begin to feed our steers green corn in August, fodder and all, the animals being on alfalfa pasture. Later on as the feed is increased and the fodder not eaten clean enough, we add some jerked corn. After the corn is cut up into shock, we feed all the shock corn that the animals will clean up the fodder with, and add enough husked corn to make up the feed, increasing the husked corn as the cattle are being ripened. When the ground is dry this is fed upon the pasture in clean spots; and most of the manure is dropped just where it ought to be, and labor is saved in moving and spreading it.

Cows giving milk may be fed like the beef cattle, only less corn.

Animals being roughed through may have all the corn fodder they will clean up with the hay. This is the cheapest combination of feeds for them.

On the barn floor will accumulate hay chaff. This may be gathered up and fed to pigs, sheep, or poultry. Our women folks sometimes scald this, adding corn meal, and the poultry eat this mixture greedily in winter.

We have never fed alfalfa meal; but we hear that some can pay forty dollars a ton for it, and feed it with profit. We have also heard that any good farm mill that will grind ear corn will grind the hay. We expect to give this a trial. The farmer might get a good mill and a gasoline engine and try to feed a part of his crop in the form of meal. Then the sheep, pigs and poultry can be fed their share. Of course, corn meal ought to be fed with this alfalfa meal to balance the ration. The feeder can tell by experiment how to combine the two, as no exact rule can be given for all kinds of stock. Of course, more or less roughage must also be fed to the stock that get the ground feed or they will not do well.

Mixed hay is better than pure alfalfa, unless some feed like corn fodder is fed with it to balance the ration. Sometimes we sow a little timothy with the alfalfa, especially when we think the land will raise more feed with this mixture. After the first or second year, some blue grass gets into the meadow and a little of this improves the hay for feed.

# Alfalfa for Pasture

# CHAPTER VII.

## ALFALFA FOR PASTURE.

After the meadow has been mown for several years, considerable blue grass will likely crowd in. A little blue grass improves the hay; but, when the amount is over one-third or perhaps one-fourth part, the meadow would better be turned into pasture. This combination of blue grass and alfalfa makes good pasture both in quality and quantity; for they balance well as a feed, and as the alfalfa dies and rots the blue grass thrives wonderfully well on the fertility given out by the decaying alfalfa. The farmer may then be surprised to see each acre of such a pasture keep one medium sized steer, where it took three or more acres of blue grass before. Of course, this will depend a great deal on the land and other conditions, as some will have twice as good a pasture as others.

Alfalfa, like red clover, will under certain conditions bloat cattle. But we have had no trouble in this respect for many years, as we have learned the conditions and can obviate them. We have learned that when plantain and other weeds and blue grass are growing with the alfalfa, little or no bloat appears. So we do not now have pasture of all alfalfa; and, to be doubly certain, we do not let the animals remain long when first turned in. The first time turn them in after dinner when the grass is dry and leave them in say one hour, then take them out. Next day leave them in a little longer, and continue to increase the time of grazing until they can remain all the afternoon. Next we turn them in in the morning after the dew is off, and so for perhaps a week, when by this time they have got the pasture somewhat dirty and can be allowed to remain in all the time, but we see that they are full of dry feed before first turning them in.

It may happen on days when they are first turned in that a rain will come up. In this case take the animals out at once and wait until the grass is dry before turning in again.

During these days of getting the cattle used to the new pasture, they should have a plenty of dry feed, such as straw, corn fodder, hay and perhaps more or less corn. If the farmer is careful in this respect, we think he will have little or no bloat among cattle.

Later in the season we make this pasture our principal feeding ground. The steers are fed here, except perhaps during a few weeks when we put them into closer quarters to ripen them. The pigs generally have the run of this pasture and get corn. The corn being a good thing to feed with alfalfa to put on fat and meat, and is also a good thing to feed with the alfalfa to increase the quantity and quality of the manure. We have found that this feeding on the pasture has helped the grass; and, when the field was broken up, it showed very substantially in the corn or other hoed crop; and also the good results remained when the field went back to grass, the land getting richer and richer.

# Plowing the Sod

# CHAPTER VIII.

## PLOWING THE SOD.

No doubt the reader has heard something about plowing alfalfa sod, and would like to hear more about it. We will first relate how one man did it. He put four horses to one plow, kept a blacksmith in the field, and changed plows every two hours. We think this will generally do the work, and it will not be necessary to hitch on a few traction engines to help out the horses.

Dear reader, please do not worry at the beginning of this chapter, for before we get through we will show a better way. But we propose to give some of our experience to show the wrong ways as well as the right ways.

You will remember the first piece sown, we mentioned at the beginning of this book. We had plowed a piece for corn just alongside of this first seeding; and, as this alfalfa was somewhat patchy, it looked as if it ought to be broken up and planted to corn. So we started plow and team into this. But we soon grew tired, the team grew tired also, the job was abandoned for that year, and the piece was mowed for several years longer. The trouble was the ground was too dry and hard, it being a very dry spell in May, and the grass was about two feet high.

Two years after this, there was a spot in the meadow in black soil where the alfalfa was failing. It grew short, scattering, and the large weeds were coming in. We decided to plow this, and started as soon as the frost was out, the ground being somewhat muddy. The work went on at a surprising rate. The horses would pull their best for a rod or so, take a few breaths and go some more. We got over about one-fourth acre the first day, the plow scoured badly, and the work was poorly done. The next day more ground was plowed and better done than on the first day. And on each day following the team did more and better work than the day before, as the horses got toughened into it as we then supposed. But the real trouble was the ground was too soft to hold the roots firm so the plow could cut them. They simply doubled up and were pushed ahead of the share or pulled out of the ground. They cut as a grape vine or hickory root would if you doubled it up into a loop

Alfalfa Pasture mixed with blue grass. Picture taken August 11, 1911, season being very dry and pasture heavily stocked with horses, sheep, hogs and cattle.

and tried to cut the loop with a knife inside pushing from you.

This piece was planted to corn, but the alfalfa came up in the corn like weeds. In fact, the plowing seemed to have helped it to grow, rather than to have destroyed it. We took hoes and cut it out several times; but, soon after the corn was laid by, the same grass stood like a meadow in the corn. It went to seed, and this seemed to kill it, for the same piece was in corn the next year and the alfalfa was dead.

Again we broke up a piece. But this time we conquered and solved the problem of how to plow alfalfa. This piece was plowed when the new growth was about six inches high. The ground had settled and yet not too dry. We had a large new file, and every few rounds would stop and dress up the plow share, keeping it sharp like a knife. Two horses did the work, and walked right along except when the file was used. The team probably plowed at the rate of an acre in five or six hours. The plowing killed the alfalfa; for, after thorough preparation of the seed bed, no alfalfa appeared green in the corn. The reader, after learning of both ways of plowing, can choose for himself, and avoid some of the experience we had.

But above all, we would not break up an alfalfa sod unless the alfalfa was nearly all run out. When this is the case, the roots are so nearly gone that the plowing will not be very hard. As long as there is much alfalfa growing, it is a good thing to let alone, for it is making the owner money with but little work and the land is improving. If he wishes, he can pasture it to death and the roots will soon decay, so the plowing will then be an easy matter.

# Alfalfa Sod for Corn

# CHAPTER IX.

## ALFALFA SOD FOR CORN.

We presume that the reader by this time has anticipated this chapter and is ready for it. He has learned that alfalfa is a deep-rooted plant, a sub-soiler; and a nitrogen gatherer superior to red clover. And hence knows that when plowed up and killed, the decayed roots fill the ground with fertility and make it more open, so that water can get out and air take its place. Hence the reader doubtless suspects that the corn following good alfalfa will show up a good crop. We have raised eighty seventy-pound bushels per acre, and are confident that in favored spots, even on white clay, it has gone as high as at the rate of nearly or quite one hundred bushels to the acre.

Joseph Wing, who lives near us and an alfalfa grower of nation-wide reputation, has raised, so we have learned, about one hundred bushels to the acre. Without doubt this yield will be doubled in time, as his farm becomes richer from the manure made from the vast quantities of alfalfa hay fed there. This alfalfa experiment is but in its infancy, and the world will in time hear much larger stories than this from Central Ohio.

We will quote from the book, "Alfalfa, the Grass in Ohio," written by the late Hon. Allen O. Myers, pages 52-53:

"In 1905 four crops were cut, measuring 12 feet 3 inches in the four cuttings, and in 1906 four crops were cut, measuring 12 feet 6 inches of grass, and one part of the field, the highest point, yielded 10 tons of alfalfa to the acre, while the average ran from two tons an acre the first cutting in 1905 and 1906 to one ton an acre the other three cuttings. Crops were cut in June, July, August and September. The one acre last year paid $120.00. The third cutting in August, was sold to Mr. Harry Olmstead, in Columbus, for $14 a ton out of the field. There was 4500 pounds, for which $31.50 was paid. All the alfalfa I could spare was sold in Columbus as soon as it was baled for $20.00 a ton."

Now suppose the writer of the above had taken the *one hundred and twenty dollars* received from the one acre and purchased corn with it, he would have received over two hundred bushels of corn from one acre of land.

The sod should be well plowed so as to thoroughly kill the alfalfa. If this plowing is done too early, it will not kill the plants and they will remain green in the corn all summer and the corn will not be much of a crop; because the grass roots do not die and decay. And if plowed too late, they will not be enough decayed and the ground not enough firmed to make a good crop. Probably about the middle of April in Central Ohio is a good time; but this will depend on the season and the ground. The alfalfa ought to be three or four inches high and the ground settled after freezing.

Before planting, the ground should be well harrowed and dragged, so as to be fine and mellow and become a good seed bed.

The planting may be done early in May, if the land is well drained, as there is but little danger of cut worms on an alfalfa sod, unless the sod has had much blue grass in it for several years. We have never been troubled with cut worms nor wire worms on an alfalfa sod, for we do not let the alfalfa stand many years; and this occasional plowing prevents the grasshoppers and cut worms from becoming numerous.

The farmer should give frequent and early cultivation, for he will not have much time for it later, as the corn will soon get ahead of the plow. He might sow rye or rape in the corn, at the last cultivation, and turn in sheep to fatten on this catch crop and the lower corn blades. And, if the corn is removed for silage or husked on the stalk, the field might be pastured in October or the fore part of November if the ground be dry enough.

# Why Some Do Not Succeed with Alfalfa

# CHAPTER X.

## WHY SOME DO NOT SUCCEED WITH ALFALFA.

We have observed the fact that occasionally a farmer is successful with alfalfa and some of his neighbors will try it and give it up, saying, "It is no good." Now the question might arise, why can one grow it while some others near him with the same soil and weather conditions fail out with it? We have been enquiring into some of these failures, and will review several of them for the reader's profit.

One man grew it, and a "big crop, too, but it was no good as a feed, would as soon have hazel brush." We found upon enquiry that he mowed it during the first half of July—just one month late. He would have done as well to harvest corn fodder in December or cut timothy after the seed had fallen off. As a general rule the first half of June is the time, in Ohio, to cut it for hay.

Another man sowed alfalfa with oats, but did not get a good stand. He sowed two bushels of oats per acre, the oats grew rank and thick, some of them fell down and helped to smother the young grass. He also let the oats get ripe before harvesting, and they absorbed all the water and fertility, and thus the alfalfa had no chance. He should have sown only three pecks of oats, and mown them for hay as they were heading out, then he might have succeeded.

Another went to the seed dealer for his information, and sowed thirty pounds of seed to the acre. The grass grew quite thick and also quite short, and he did not get much hay; so alfalfa was no good in his case. He would have raised as good a corn crop by planting thirty pounds of seed corn per acre. Ten pounds of good alfalfa seed is an abundance, if the weed seed is killed and the ground in proper order.

Still another sowed it and he was going to do it right. He cultivated the ground and sowed it alone very early in the spring; and he thought his work was well done. But before the year was over the weeds had conquered him; and so he knew better than to try again. The reader already knows that the ground must be cultivated for quite a time to kill the seeds of foxtail and crabgrass, and that these grasses can kill out young alfalfa; hence he can understand why this man failed.

Another raised an early hoed crop, as some now advise, and after harvesting this crop prepared the land and sowed in September. But in the following spring the meadow was patchy and had to be plowed up. This man had enough of alfalfa experience, for alfalfa would not do on his farm, so he did not try again.

One man sowed a piece and avoided in the main the above errors and sowed one-half peck of seed per acre, but the grass grew too thin for him and he plowed it up. He had a stand, but he did not know it. He seemed to think it ought to be as thick as the hair on a dog's back.

Some have tried it on virgin new ground soil, where one would think it surely would do extra well; and gave it up because it came uneven and had vacant spots in it. The trouble here probably is the soil is not well inoculated. In such cases, after the failure, it is best to plant a hoed crop, and the following year try alfalfa again. And where alfalfa has never been tried on new ground, it ought to have red clover sowed with it, and the crop pastured or mowed for a season, then cultivated for a season in a hoed crop, then try alfalfa.

One of our neighbors sowed a field and succeeded fairly well; but prosperity was too much for him. When he wanted to plow corn, he had to stop and cut alfalfa. When he wanted to thresh oats, he must stop to cut second-crop alfalfa. When he wanted to go away to fish, he had to face third-crop alfalfa; so he gave up the job. He might have sown more acres of alfalfa and planted less corn and sown less oats, hired a gang of men to make the hay, sold part of the hay, and let one acre of alfalfa hay buy one and one-half acres of corn or oats delivered at his farm.

Some soils are said to be acid, and ground limestone is said to be the remedy. Try 1000 pounds on one acre, 1500 on another, and 2000 on a third, or smaller pieces at the above rate; and thus find out by experience the proper quantity for certain fields.

Some farms may not grow it because they have been rented too many years, and the top soil is too poor to start the crop. Such farms ought to be first manured and clovered until the top soil is full of humus, then try the alfalfa.

We will now give the case of a man who snapped his fingers at failure, a man whom failure could not daunt—Charles F. Sprague, of Allen County, Ohio. For full particulars the reader is referred to the American Agriculturist of May 6, 1911. But for our purpose, at present, we will give the reader the substance.

In the spring of 1907, he began with a ten-acre field, about one-half of which was black ground. Before plowing he covered heavily with manure from cattle barn. After plowing, one and one-half tons of ground limestone were spread to the acre with manure spreader. About August 10 the seed was inoculated with nitrogen fixing bacteria and sown 20 pounds to the acre. But the season was dry and the plants made but little growth before winter set in, and were winter killed.

He tried again the next year. Again covered the field with a heavy coat of the same kind of manure, and plowed it under. This time he limed with 200 pounds to the acre. The first week in July he sowed the same quantity of seed. But the weather was again dry, and the plants did not make sufficient growth to withstand the winter; and, although a part in spots would do for meadow, the piece was too patchy to leave. But he saw he was gaining; so he prepared the ground in the same way the spring following, except he only manured the clay ground. About *June* 1, 1909, he sowed the seed as before. The June rains brought the plants forward so much that they went safely through the winter. He cut for first crop the following year, 19 tons and 840 pounds; and for second crop, 19 tons and 1200 pounds. He did not weigh the third cutting, but estimates it as about one-half of the second cutting. He did not cut the fourth time, but estimates this growth as equal to the first cutting.

But during the spring of 1911 the plants were badly heaved out in the undrained spots, and he estimates the loss in hay this season as equal to what would have been the expense of draining it. So he intends to drain his next field with tile-drains three rods apart.

The reader will notice that this experience is in harmony with what we have given, except he sowed more seed than necessary or best; and, if he had not manured so heavily, this heavy seeding would have made short hay and the yield

A part of Orchard on hillside; trees set promiscuous, the different kinds mixed.

would have been reduced very materially. But this man is bound to succeed.

Time is an element in success, which we must not despise. The soil is a great store-house of fertility, but nearly all in an unavailable form, and but a little is liberated each year. We can regulate this amount within limits. When we tile-drain and cultivate, we let in air and thus make more plant food. When we apply stable or barnyard manure we loosen up the soil, and the humus helps to hold more water. When we cultivate and at the same time remove no crop from the land, it is evident that this fertility is being stored up. This was the way in Mr. Sprague's field, and it would only have been a question of time when the field would have raised the alfalfa in spite of the drouth. And this is the main hope of every one who has failed; if he will not remove any crop from the land, it will become fertile enough in time to raise alfalfa in spite of dry weather.

Some own land partly in the valley and partly on the hillside from which flow springs. These springs may be conducted into reservoirs below, and used to irrigate alfalfa; and thus the element of drouth may be eliminated.

But why prolong this chapter further? Other crops fail at times, and why not alfalfa? Also other crops succeed well at times, and why not alfalfa? Alfalfa is full of surprises, and we are learning something new every year. The lesson the beginner should learn well at the start is, not to give up if he fails the first time; but find out the reason for the failure and try again. Just keep on trying until he does make a grand success of it. But the reader might think this too expensive. Not if a small piece of ground is used in first experiments and the beginner learns to grow it. He should read all the literature he can get on the subject; and, by study and practice, become master of the situation on his farm.

# Possibilities of Alfalfa

# CHAPTER XI.

## POSSIBILITIES OF ALFALFA.

We propose to make this the most interesting chapter of this book. We will try to show that almost any farmer can succeed with alfalfa; that it can be grown on almost any soil; and that the results in profit will multiply at a surprising rate to any farmer who will stay with the plant, and grow it to the utmost extent on his farm. Success is only a question of time, and there are thousands of dollars waiting for the alfalfa grower to grasp.

When this plant is once established in a field, it sends its roots down deep into the subsoil, much deeper than those of the annual crops can go. In fact, they will go down until permanent water level or solid rock is reached. This will loosen the hard sub-soil, let in air and develop a large quantity of plant food, so that when the field is plowed other crops will find a deep feeding ground for their roots. The dead alfalfa roots will become humus. The worms and other bacteria, the air and other forces of nature, will work on this subsoil and transmute it into a deep rich soil which will be growing richer and richer as the years come and go.

This plant is always growing whenever anything else grows; both very early in the spring, during the dry and hot weather in August, late in the fall, and even during warm spells in winter; always growing a valuable stock food, and the roots making fertility that is making this field richer in spite of the crop taken off and fed elsewhere.

What shall we say about the tops? When they are pastured down they will make the surface very rich. And when they are removed and fed elsewhere, they give fertility to other fields, so when they in their turn are sown to alfalfa, the proper bacteria will be ready to help the new crop.

We do not sell hay. Perhaps we might sell a little to accommodate a neighbor, but never any to be shipped out of the neighborhood. The hay buyers never offer the full value of the hay to the farmer, who can feed it and use the residue as a fertilizer. We wish to make our meaning quite plain here. Suppose the hay dealer offers twelve dollars a ton for the hay; cannot the farmer, by feeding other feeds with the hay, make it bring him six dollars a ton. Then the nitrogen, potash, and phosphoric acid contained in the manure, estimated at their value in commercial fertilizers, ought to be at least another six dollars. Also, the humus value, six dollars would be a very low estimate on this. The farmer ought to have on an average twenty dollars a ton if he sells hay; and, if he sells it, he ought to buy back in other feeds an equivalent.

The farmer who never sells his crops, only in the form of stock or other finished product, will reap their value every time it returns to him as a crop, over and over again. His soil will become richer and richer as it becomes deeper and more loaded with humus.

There is a bulletin published at Washington, D. C., Bulletin on Soils, No. 22. The substance of which is: A soil is fertile according to its *physical* character; not according to the *chemical* elements found there. In other words, if the soil is drained so the air can get into it, if it is full of humus and alive with bacteria—it is a fertile soil, notwithstanding what the chemist finds there in the form of unavailable plant food.

Alfalfa grows more fodder than any other plant in the Central States and consequently gives more humus back to the soil, when we consider its vast root growth.

We would speak further of its root growth: We have seen three continuous corn crops raised after alfalfa, the last as good as the first. You know two good corn crops are sometimes raised after red clover, but the third is poorer. We may account for this thus: The first season only the upper part of the roots decay, and the corn feeds on this decayed part. Next year the decay goes further down, and another good corn crop is the result. The third year the roots are more decayed, and still another good crop of corn. Yet we make it a practice to plant corn but once in our rotation, because we do not want the top soil to become dead, and because we have another alfalfa field ready to plow that will give just as good a crop of corn, and we think if the corn field goes back to grass at once the result will be better than if more corn crops are removed from it and the soil becomes compacted. This corn crop does not worry us; we break up the land and raise one corn crop because it is an improvement to the soil to plow it after a series of years, and it pays to change crops once in a while. If we get out of corn, we can buy it delivered quite cheaply, and in fact we have to buy some every year to balance the alfalfa ration. This corn and alfalfa rotation has raised the fertility of Wildwood Farm so we have grown seventy-five and eighty bushels where less than twenty grew twenty years ago. Of course, we have tiled some. Most of the farm is thoroughly drained with lines of tiles three rods apart, at an approximate cost of fifty dollars per acre, and alfalfa has paid the bill.

When this plant was first grown in Ohio its success was so various that our experiment station did not at first see its possibilities; but a few of the growers soon grasped the fact that they could make nearly every acre of their farms grow good crops of it. On Wildwood Farm we grew good crops from the first in patches. The spots and streaks of black ground did very well at first for two or three years, and some places on the high red clay, and even on low white clay that had been manured, did well at first and continued to do well until the piece was plowed. This taught us that the unproductive spots only needed manure and drainage to make them equal to the rest of the field. And as we raised more and more alfalfa and fed it more and more, the manure was used on the spots where the alfalfa did not do well; and we had the satisfaction of seeing these poor places come up to par in fertility with the rest of the field. So as time went on the acres of alfalfa increased until we have grown it successfully in every plowed field on the farm.

The word comes to us through the reports from our experiment station that alfalfa has been successfully raised in spots in every county of the state and on all kinds of soil. That is some farmers have done this, while some have failed in every part of the state; but the failures were not because of the localities, but because of the men. So, dear reader, it is up to you whether you succeed, and not your locality. If your soil is wet you can certainly drain a part of it. If it is poor or lacks humus, you can apply manure. If you have been selling off the crops and the land is growing poorer year after year, you can quit doing this. If the soil is acid and needs lime, you can send away and get the raw ground limestone, and this soil will respond. If you are not able to grow large fields at first, you can at least try an acre or fraction of an acre until you learn how. Then, when you grow some, feed it and make the manure help to grow more acres; and, when money comes in to spare, buy corn to feed with the alfalfa to balance the ration and make more manure to hasten the work of building up the fertility of the farm. We wish every reader of this book would feel as we do and would start to grow the plant; and, not only start, but continue to grow it, and success will come to him as it has come to hundreds of others, and he will grasp in time the thousands of dollars waiting for him if he will only stay with it long enough.

Only think what it would mean if farmers doubled and doubled again the fertility of their farms: the real values would be more than four times as great, for most of this added fertility would be clear profit—say worth ten times as much as at first. And the results do not stop with the farmer, the cities about him can support twice and three times the population. The cities are very slow to learn the lesson that, when the farmers are prosperous, the cities will be prosperous; and that, when the farmers are poor and oppressed, this will react on the cities that are supported by the farmers. You farmers who have moved to the neighboring city and have rented out your farms, stick a pin right here and see that alfalfa is raised on your farms, even if you have to go to the country yourselves to raise it, for you probably cannot double your capital as quickly in any other manner.

But suppose every one should do so at once. We cannot entertain at all such a supposition, for reforms do not come at once, nor was the world made in one day. A few will raise the plant at first and finally succeed; a few others will then follow; but the great majority will procrastinate or doubt until the cities grow so large that their cries for help and bread wake up more and more of the drowsy and petrified ones, and they will arise to action in the right way. Meanwhile, a few will profit by the slowness of the rest, and become well-to-do financially.

The hill farms are best for alfalfa. The hay is quicker made, for it dries sooner on the high land than on the level or low; and hence the quality is superior to that grown on the low and black soil, being not so apt to be spoiled in the making. Another thing about the hill farms is, they are better drained naturally, especially if

A bit of waste land between the orchard and forest. Through this runs the brook which has cut a gorge and overflows the valley no more. On the background among fruit trees, appear berry bushes which may in future be extended all over the open space; and, together with the young fruit trees, will soon occupy the waste places. The small trees have been set since the brook occupies the lower level.

they are underlain with sand or gravel. The sod broken up on the hillsides for corn will not wash much the first year; and, if seeded to alfalfa after one corn crop, will not wash after that. So when the hill farmer, whose farm is hardly paying expenses now, finds out in earnest the possibilities of alfalfa on his farm, he will soon make it worth one hundred dollars an acre, and wealth will come to replace poverty. Yes, alfalfa will grow grandly on the Ohio hillsides bordering the creeks and river bottoms, whether the soil is either white or red clay, if once well started.

# Conclusion

# CHAPTER XII.

## CONCLUSION.

Well, the story is finished, the experience given, and it now remains for the reader to remember some of the lessons taught in this book before he enters the school of experience. We feel that this volume should not be thrown away or loaned so it could never be read again; but read over and over, and kept at hand when the reader starts to grow alfalfa, for he will need to refer to it from time to time.

Could the reader but know what Wildwood Farm was like years ago, with its debt, its hillsides yielding but little, most of the plow land wet, farm stumpy, its owner discouraged; and view it today with its hillsides covered with young forest and orchard, most of the plow land thoroughly tile drained and yielding more than thrice the crop that formerly grew here—we say, if the reader knew all, and knew at the same time that alfalfa was the main spoke in the wheel that drew us out, he would realize that the writer of this book has a mission in sending it forth that many a farmer whose lot seems hard may take heart and fasten securely on prosperity.

In order to make our meaning plainer we have used the word "alfalfa" oftener than the literary critic would advise, for he would have oftener substituted a pronoun in its place; but ALFALFA is a good word to conjure with and is freighted with great possibilities.

We are about to take leave of the reader; and we express the hope that he, who has followed us through these pages, has not been disappointed. We have tried to give the facts in such a manner as to help the one seeking information about the alfalfa plant. Much has been left unwritten lest this book be too bulky for the practical farmer, who often reads many books and papers, and whose time is nearly all absorbed in his farm environment. Should this work meet with a welcome response, we propose to rewrite it, and embody in the new book other facts concerning the wonderful plant, and also the results of experiments now in progress. For the present we bid the reader

GOOD-BY.

# Description of Wildwood Farm

The Author and his Family at Home.

# DESCRIPTION OF WILDWOOD FARM.

This farm is located about four and one-half miles northeast of West Jefferson, in Madison County, Ohio; and on both sides of what is called the East Pike, which runs north and south and crosses the old National Road four miles south of the farm.

The farm contains about 96 acres. Three-fourths of this land is suitable for plowing. About one-fifth of this is black soil, and after being drained, is capable of raising fairly good crops with fairly good farming. Another fifth is red clay, a soil not near as good as the black with ordinary methods of farming, yet by intensive farming may be made to yield more than the black, for it contains more lime.

The rest of the plow land is the white clay, which some years ago was as white as ashes or marl, but lately has a much darker look owing to the humus that has been accumulating within it. An observer might say that black soil had been mixed with it, about half and half.

The original forest was mostly white oak, but there were other kinds, among which the white elm, and some burr oak once grew where is now black ground.

The other fourth of the farm contains the farm buildings, orchard, young forest, the east side of which is on the bank of Big Darby creek. The surface is mostly hilly. The part along the creek is subject to overflow, and so cannot be cultivated. This is now set in timber. The forest consists of black locust, catalpa, and mulberry, except a part of the ridges, which contains a second growth of the original forest, including a few sugar maples of the original forest.

About fifty-five years ago, this farm had the reputation of being the poorest in the neighborhood; and, twenty-eight years ago, when the writer began here, the old board underdrains had entirely ceased to be of use, and had to be replaced with tiles as fast as the owner of a heavily mortgaged farm could do so, though at a tortoise pace.

But the writer has a wife that is a true help-mate, and together they have met the obstacles in their path and overcame them one by one.

The above description is given that the reader may know where to find us and also learn for himself how true is this book; and, if he is the owner of a white-oak farm, he need not hesitate to grow alfalfa.